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ABSTRACT

This study explores the effects of different methods of selecting school district trustees and the effects of expenditures per pupil on the perceived quality of education. It also examines the success of South Carolina's Education Improvement Act of 1984 (EIA). The dependent variable was the ratio of private school to public school enrollment in South Carolina. This was based on the idea that parents' perception of the success of public schools would affect private school enrollment. Data were gathered on relevant independent variables (e.g., per capita income, number of districts in county, population density) for the period 1956-1987 across the 46 counties in South Carolina based on various editions of the South Carolina Statistical Abstract and the Annual Report of the Department of Education of the State of South Carolina. Findings were: (1) there is no statistically significant relationship between public school expenditures per pupil and the private school/public school enrollment ratio; (2) changes in rules, organizational structure, and incentives mandated by EIA did reduce the relative number of children attending private school; (3) counties with multiple school districts have better public schools relative to the private peers; and (4) when public school trustees are appointed rather than elected, parents tend to send their children to private schools. In addition, population density had the predicted negative effect on the ratio of private to public school enrollment. (KS)

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Working Paper Series

PRIVATE AND PUBLIC CHOICES IN PUBLIC EDUCATION: AN INVESTIGATION OF TRUSTEE EFFECTS

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PRIVATE AND PUBLIC CHOICES IN PUBLIC EDUCATION: AN INVESTIGATION OF TRUSTEE EFFECTS

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May 1991

PRIVATE AND PUBLIC CHOICES IN PUBLIC EDUCATION:
AN INVESTIGATION OF TRUSTEE EFFECTS[1]

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Education is one of the most important roles of government, yet its management and organization have received surprisingly little attention in the economics literature. In this paper we study the impact of various organization structures on the quality of education. We develop a model of the demand for private schooling which, by inference, allows us to assess the quality of public education. We estimate the parameters of the model using 30 years of data across the 46 counties in South Carolina. Among other things, we find that counties with multiple districts seem to have better schools, counties with elected rather than appointed trustees have higher quality schools, the structural changes mandated by the 1984 Education Improvement Act have made for better schools, but like others working before us, we could uncover no relation between expenditures and the quality of education. Structure matters more than money is the lesson of this research project.

I. Introduction

In recent years, economists who apply relatively new management theories to the study of organizations have begun to focus on public education (Toma (1983) and McCormick and Meiners (1988) for examples). In the past, massive amounts of research examined such things as the education tax burden, the benefits and costs of public education, and important related questions having to do with the formation of and return to investments in human capital. By and large, the education firm was viewed as a non-thinking black box, an unchanging feature of nature that simply reacted and responded to citizen action. Little thought was given to who was in the box, their objectives, constraints, and incentives, what we term the management structure of the education firm.

In a way puzzling, the benign neglect of education managers by most managerial economists may be just another example of the cobbler's barefoot children. The more remote the object of research, the more attractive the topic appears to members of the academy. On the other hand, economists recognize the scientific (and career) hazards encountered when studying themselves and their own organizations. Yet the topic of incentive structures in higher education caught the attention of Adam Smith, who had much to say, but little to recommend about the education firm.[2]

The importance of management to the measured success of high schools has been lifted recently in work by Chubb (1988). Chubb examined a large data set of 500 high schools, 12,000 teachers, and 12,000 students, where the students had been given entering and exiting exams to measure education gain. Searching for determinants of academic achievement, Chubb found no

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[1] Along the way we have benefitted from able-bodied assistance in many forms. Notably, the comments of Jeff French, Mike Maloney, and participants at the Political Economy Research Center's First Annual Political Economy Forum, Bozeman, Montana, June 9-12, 1990 are gratefully acknowledged.

[2] See Smith (1937) pages 716-719.

correlation with expenditures per pupil, size of class, teacher salaries, homework assignments, graduation requirements or any other school policy, the things that reformers seem to feel are important. As Chubb put it, what really mattered was how the schools were organized. Successful schools had principal/managers who consciously sought academic achievement for their students and were allowed flexibility in accomplishing that end. The research findings we will report suggest Chubb's successful managers did not emerge by happenstance. They were hired and monitored by trustees who sought to maximize the asset values of the schools in their jurisdictions.

The research we have undertaken is intended to expand our knowledge about the management structure of educational units. The paper applies the concepts of the horizon problem, agency costs, monitoring, and special interest incentives to trustee management of public schools and higher education. A major part of our work relates directly to South Carolina's 1984 Education Improvement Act (EIA), a major restructuring of educational organization and spending in S.C., and we report a test of EIA effectiveness.

Two central questions form the heart of our paper: 1. Do different methods of selecting school district trustees and trustee terms of office affect the apparent ability of public schools to attract students when competing with private schools? 2. Does increased spending on education affect its quality?

The paper has three parts. The next part of the paper reviews managerial theories and concepts that we apply in later empirical work. The second portion of the paper reports research on public school performance in South Carolina, which tests the effectiveness of the EIA and theories of trustee behavior. A short summary concludes the paper.

II. Theories of Trustee Behavior

Why Trustees?

According to Fama and Jensen (1983), trustees exist in nonprofit firms to initiate decisions and monitor the behavior of managers in implementing those decisions. As the principal monitoring agent in the firm, the trustees replace the function of capital markets in private firms that, acting on behalf of collective asset owners monitor and discipline the behavior of hired managers. In this important sense, the trustees represent citizens who hold an inalienable stake in the assets of the education unit and are liable for the unit's debts but who cannot monitor asset management at low cost.

In our view, the term of office and selection methods of trustees for taxpayer-supported public schools and universities reflect necessary political contracts formed between important interest groups and politicians who are constrained by a large mass of rationally ignorant voters. Among the voters, those with children attending publicly supported schools are logically better informed than those who are not directly connected to the educational process.

Differences in the terms of trustee contracts (the rules by which trustees are selected and terminated) reflect different constraints and political necessity. But elements of the contract that relate to terms of office and method of appointment will generate incentives that affect important management behavior and the future asset value of the education firm.

Trustee Incentive Problems

Among these incentive problems there is first the horizon problem. A contract calling for longer trustee terms, with life trustees being the limiting case, is evidence that asset owners have greater marginal influence in efforts to maximize the net asset value of institutions. Longer terms provide the key management agent with the ability to consider and be recognized for returns that have a larger long-term payoff. Since public sector managers have no future claim on the excess of revenues over costs, they naturally tend to maximize the present value of benefits (not necessarily asset values) they can claim while in a position of authority. The shorter their time horizon, the more likely they will seek quick returns, foregoing profitable ventures whose income streams emerge beyond the trustee's tenure. However, trustees are constrained by the method of appointment when choosing among alternative decisions.

In a principal-agent sense, the trustee-agent must satisfy the appointing authority to secure his position. If the trustee is appointed by politicians who in turn must satisfy their principals (the voters), the trustee's investment horizon will correspond to the politician's office horizon. That is, the trustee's actions will reflect the politician's need to distribute visible benefits to his constituents. To the extent that voters are myopic, responding to immediate payoffs, the politically appointed trustee will choose to engage in activities that generate highly visible and quick returns.

The longer the trustee's term of office, the more likely the trustee will engage in activities that generate a longer stream of higher valued benefits. At the limit, a life trustee, if chosen because of past generous support to the education firm and therefore less accountable to politicians, will manage the educational unit in ways that more nearly maximize the value of the assets committed to trustee management.

If the trustee is elected by voters within the school district, an element of agency cost is removed. That is, voters can monitor the trustees directly and act to continue or remove the trustee, as opposed to monitoring the trustees and communicating with politicians who generally represent areas larger than a school district. Trustees elected directly by parents in a school district will behave differently from those elected by voters in larger jurisdictions with competing interests, since directly involved voters will be better informed about the performance of their schools.

Previous Research on Incentive Problems

Research on agency cost and the trustee problem reported by Toma addressed some of these issues in the context of state boards of education that manage public schools and state boards that manage universities (Toma 1983, 1986). Toma hypothesized and found evidence that appointed board members (trustees) of state public school systems were more likely to regulate instead of manage principals than elected trustees. She also found that appointed trustees shared apparent rents with public school teachers, allowing costs to be higher than in the case of elected trustees. When she examined the length of appointment for board members, Toma found that trustees with longer terms tended to extract more from citizens for themselves and their associates than did short-term counterparts.

Toma's (1986) work on college boards examined two situations, one where trustees manage a single college and another where a single board manages several colleges. Focusing

on agency cost, Toma argued that faculty and administrators would have greater leeway to follow their own directions where trustees have several schools to monitor. In the latter case, there is a tendency for faculty salaries and performance to regress toward the mean. Put differently, mediocrity reigns supreme. On the other hand, the single university board will run a tighter ship, holding managers more accountable for their use of resources. In a follow-up study, Toma (1990) examined differences in the state share of student tuition, patterns of faculty tenure, and pupil teacher ratios for a sample of universities having differing management structures. Her findings show that universities with individual boards of trustees behave more like private universities, as compared with university systems that share one board.

We have noted that trustees with shorter terms must be sensitive to political pressures. They are more likely acquiesce to faculty who desire to manage educational units, since public controversy is to be avoided. However, an increase in faculty control of management decisions is expected to be associated with a decline in academic achievement. Research by McCormick and Meiners (1988) examined this issue for universities and considered the degree to which faculties are authorized to influence some 31 management decisions often made by university boards and administrators. Using measures of faculty and student research output and other indicators of university quality, McCormick and Meiners found quality to be lower where faculty management participation was higher.

Research on the role of trustees reported by Henry Manne (1973) reviewed the history of universities and discussed the relationship between university trustees and faculty in terms of a power struggle over educational priorities. Trustees gained their management positions either by having made major contributions to universities or by being appointed by people who had made such commitments. Manne saw the trustees as seeking to maximize the long-run value of the educational product. He argued that educational units were given non-profit status to prevent entrepreneurs with short investment horizons from altering the products desired by large donor/investors. As the finance burden shifted from trustee/donors to taxpayers, the trustee came under greater political influence, and the term of trustee appointments became shorter.

Summary

The theories of trustee behavior we have described and the research findings related to them suggest we should observe significant differences in the quality of educational units in association with different trustee structures. All else equal, measured academic achievement (quality) should be higher the longer the term of the trustee. The horizon problem is mitigated. The trustee appointment method should also affect the quality of the educational product. Trustees responsible directly to citizens in their own community are predicted to be closer monitors and managers of educational quality than those who must respond to politicians elected by a larger group of citizens. Agency cost is reduced, and monitoring costs are lower. These empirically refutable propositions form the basis for the next part of our paper where we examine public schools across the 46 counties of South Carolina.

III. Trustees in S.C. Public/Private School Competition

The Effectiveness of EIA

South Carolina's Education Improvement Act of 1984 (EIA) dedicated $1.2 billion over a five-year period for improving public education. Funded with a one cent or 25% increase in the state sales tax, the legislature appropriated $213 million of the new funds for the 1984-85 school year. Of this, $68 million was earmarked for additional teacher pay; $59 million for remedial education; and $58 million for the construction of new buildings. With these increases came funds for additional administrators to manage the EIA effort. The EIA was heralded as bringing a better day for public education in the state. In addition to increased funding, the 1984 EIA also restructured public school education in South Carolina in a number of ways. Regulations were imposed requiring students to pass at least four academic courses to be eligible for participation in interscholastic activities such as football. The number of units required for a high-school diploma was increased. All secondary schools were compelled to offer a clearly defined college preparatory program. New and stricter attendance rules were put in place. The instructional day for secondary students was required to be no less than six hours. Kindergartens were made mandatory. All days missed for reasons of inclement weather were required to be made up. All school districts were required to provide Advance Placement courses. An exit exam was put in place for all high school students with passage required for the receipt of a diploma. New, lower student-teacher ratios were mandated along with higher teacher salaries. A teacher incentive program was instituted. New rules were created for the assessment of principals. Incentive grants were established to recognize excellence in schools and school districts with exceptional performance. All together, a number of fundamental changes were put in place.

Competition between private and public schools within and across school districts in South Carolina provides a natural experiment for examining the success of EIA as perceived by the parents of children enrolling in primary and secondary education and for testing the independent effects of school district trustee terms and appointment methods. If EIA improved public schools relative to private ones, the ratio would become systematically smaller in association with pupil expenditures, all else equal.

South Carolina has 46 counties that control secondary education in the state. Table 1 and Figure 1 report enrollment in private secondary schools as a fraction of total enrollment from 1956 to 1987. In 1987 there were 624,832 students enrolled in public schools in South Carolina. An additional 45,778 were in private schools. South Carolina schools began to seriously integrate in 1965, and forced busing for racial balance began in earnest in 1972. The latter stands out prominently in the figure.

Table 1 Secondary School Enrollment in South Carolina

Year	Private	Public	Ratio
1956	8794	563244	.01537
1957	9637	575076	.01648
1958	10710	584283	.01800
1959	12371	782852	.01555
1960	14043	610101	.02249
1961	14094	621419	.02217
1962	13626	627443	.02125
1963	14149	639518	.02164
1964	14864	652006	.02228
1965	16951	652529	.02531
1966	18686	655163	.02773
1967	21840	655946	.03222
1968	22311	658243	.03278
1969	24063	657905	.03528
1970	26009	652848	.03831
1971	38750	639263	.05715
1972	43569	628780	.06480
1973	46814	614667	.07077
1974	47997	612361	.07268
1975	50318	608327	.07639
1976	51511	645389	.07391
1977	53045	605133	.08059
1978	54128	604741	.08215
1979	54047	640206	.07784
1980	53669	637733	.07762
1981	51474	635187	.07496
1982	51184	626001	.07558
1983	51445	621497	.07644
1984	51219	617101	.07664
1985	51406	604978	.07831
1986	50150	604030	.08320
1987	45778	624832	.07326

The single largest jump in private school enrollment occurred in 1972.[3]

Figure 1 Private School Enrollment in SC

The research problem we faced was the development of the statistical counterpart to the natural experiment, which is to say how to specify the determinants of the demand for private/public education. We encountered a major problem with data collection and were necessarily forced to resort to a course of action that is less than perfect. We were unable to obtain any price data on tuition charges at private schools. Thus our hypothesized demand equation is misspecified. However, we were able to obtain what we consider reasonable proxies for costs of operation. It is our belief that the remaining source of error is minimal, but the reader may take another view. In sum, we hypothesize that the demand for private school enrollment is a function of the year, income, population, the fraction of the population that is non-white, the number of school districts per county, real expenditures per pupil in public schools, the population density of the county, whether the public schools were integrated, whether there was forced busing, and the level of education in the county.

Intuition suggests that higher incomes, larger population, and more education lead to larger demand (and supply) for private education.[4] We expect these three variables to be positively associated with the demand for private school enrollment. For a variety of reasons not all tied directly to prejudice, the racial composition of the population may affect the demand for private schooling. Under virtually all scenarios, a positive relation is expected between the proportion of the population that is non-white and the demand for private school.

The population density of the county may affect the costs of operation. Counties with larger areas/less population must transport kids farther to private schools (public school transportation is free), raising the cost (and price) of private education, thereby reducing the demand for private schooling.

The organizational structure of schooling is the primary focus of our study. Most counties, 29, have a single school district, some 63%; 11% of the counties have two districts, and another 11% have three; the remaining 15% have four or more. This variable is included in the model to adjust for the level of competition among public schools in each county. The larger the number of competing school districts, the more likely public school quality would rise,

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[3] At the individual county level, the county with the smallest secondary-school student body had just 1740 total students in 1985, the largest, 51,682 students. One county only had 63 private students in 1985. By contrast, the largest private school enrollment was 8,738 pupils.

[4] We measure the level of education in a county by the median number of years of schooling attained by the citizens in the county.

as parents can vote with their feet at relatively low cost within a county. If the competition argument is correct then, counties with multiple public school districts will have better quality schools, other things the same, than counties with a single, county-wide, monopoly-like, district, and consequently the private school/public school ratio will be lower as the number of districts increases.

Over the period of our analysis, two important legal changes have occurred that are likely to affect the private/public school choice, especially where parents are sensitive to the issue of racial integration. While *Brown v. Board of Education* (1954) was certainly the most important Supreme Court case in school desegregation, two other events are almost as important. The Civil Rights Act of 1964 coincided with the first instance of public school integration in South Carolina with the admission of Harvey Gant to Clemson University and signalled a new day in South Carolina public schooling. Thus we include in our model a dummy variable bifurcating our sample into the integrated period, post 1964, and the segregated period, prior to that year.

Secondly, in April 1971 the Supreme Court held in *Swann v. Charlotte Mecklenburg Board of Education* that busing should be used to force desegregation where geographic patterns did not yield that result.[5] This ruling was the culmination of more than 10 years of litigation aimed at forcing (primarily) Southern states to fully and completely integrate public schools, not to simply tokenly desegregate them.[6] To account for this radical change in the legal environment, we created a second dummy variable taking the value one in the post 1971 period and zero prior to that time. In our minds these two dummy variables capture two major legal changes that took place over the period 1954 to the present. To further investigate legal and other changes that we have not specifically identified, we also included time in the model.

Expenditures per pupil are included in the model to capture the effects, if any, that spending has on education. According to many educators and politicians, increasing expenditures improves education. If this argument is correct then some parents will withdraw their children from private schools and enroll them in public schools as more money is spent in public schools. By contrast, if higher expenditures are simply used to raise the salaries of existing teachers and administrators, purchase toys or other capital equipment for the enjoyment of children which, *in the eyes of their parents do not improve the quality of education*, then, increasing expenditures will not attract pupils away from the private school system. Thus, the expenditure variable captures part of the effect of the 1984 EIA, the change in spending. To account for the change in organizational and incentive structure mandated by the law, we also included a 0,1 dummy variable with value one in the post-1985 period. This one year lag allows for any effects to have a chance to work.

We collected data on the relevant variables for the period 1956-1987 across the 46 counties in South Carolina to estimate the model parameters.[7] Table 2 reports parameter estimates of the model using 1187 time-series, cross-sectional observations. All the variables in the

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[5] *Swann v. Charlotte Mecklenburg Board of Education* 402 U.S. 1 (1971).

[6] For a history of this legislation, see Green (1990).

[7] The data were obtained from various editions of the *South Carolina Statistical Abstract* and the *Annual Report of the Department of Education* of the State of SC. We are missing income and expenditure data for several years over the sample period. The income and expenditure variables were converted to real 1988 dollar terms using the CPI deflator.

Table 2 Regression Results

Dependent Variable: **Ratio of private school to public school enrollment**

Ordinary Least Squares Estimation

Source	DF	Sum of Squares	Mean Square	F value	prob > F
Model	11	2.24354	0.20396	138.654	0.0001
Error	1175	1.87551	0.00147		
Total	1186	4.11904			
	Root MSE	0.03835	R^2	0.5447	
	Dep. mean	0.05373	Adj R^2	0.5407	

PARAMETER ESTIMATES

Variable	Parameter Estimate	Standard Error	t for H_0: Parameter=0	prob > |t|
Intercept	-0.201273	0.02931158	-6.867	0.0001
Year (x1000)	0.060799	0.49026	-0.124	0.9013
Real Income per capita (x1000)	0.004006	0.00084	4.751	0.0001
Population (x1000)	0.000400	0.00006	6.500	0.0001
% of Population Non-White	0.002159	0.00010469	20.628	0.0001
Number of Districts	-0.002260	0.00066164	-3.415	0.0007
Population Density	-0.000178	0.00004934	-3.605	0.0003
1964 Integration	0.003374	0.00415346	0.812	0.4168
1971 Forced Busing	0.039042	0.00463728	8.419	0.0001
Median Years of Schooling in the County Population	0.009104	0.00177484	5.129	0.0001
Real Expenditures per pupil (x1000)	0.001654	0.00133	1.240	0.2153
0,1 Dummy for 1984 EIA	-0.010151	0.00526588	-1.928	0.0541

model are statistically significant except for the expenditure per pupil variable, the 1964 integration dummy, and the time trend. Although the time trend is away from private schooling, it is not statistically significant. Richer counties have a greater demand for private education. The population of the county and the proportion of the population that is non-white are both positively associated with the private school ratio. The more districts in a county, the smaller is the relative private school demand. Population density has the predicted negative effect on the private school-public school ratio. The dummy variables representing integration and forced busing are both positively associated with relative increases in the demand for private schooling. This finding could be driven by racial prejudice, or fears that increasing federal intrusion into the public schools would lower the quality of public education, or both. The more educated is the population, the greater is the private school ratio.

The expenditure per pupil variable is one test of the effects of the Educational Improvement Act, and the coefficient is not statistically different from zero, confirming the result found by Chubb, no relation between expenditures and the quality of education. Indeed, the coefficient is actually positive. However, the dummy variable for the Education Improvement Act of 1984 is negative and significant at the 10% level. This is an interesting result. According

to these estimates, the increased expenditures mandated by the EIA had little impact on the quality of schooling, *but the changes in incentives and organizational structure are associated with better education.*

We estimated additional models in attempts to examine the sensitivity of the original results. First, we estimated an autoregressive model. We also estimated the original model using weighted-least squares to correct for any heteroscedasticity that might exist in the errors. Then we estimated a first-order autoregressive, time-series only model using the entire state as the unit of observation. Finally, we estimated a generalized-least-squares model correcting for heteroscedasticity and autoregressive errors. The original results do not change much. Most importantly, in no case was the expenditure variable significant at the 10% level or better. Our findings suggest that increasing expenditures has not improved the quality of secondary education in SC.

These results raise a number of questions about the 1984 EIA. At least, these preliminary findings suggest that the bulk of the increased spending on education in South Carolina, *as viewed through the eyes of parents of school age children,* **did not have an appreciable impact on the quality of education.**[8] However, at the same time, we find that the structural changes mandated by the law, are associated with improved quality of education in the state. Structure, incentives, and organization matter more than money, at least according to these results.

Trustee Effects

In South Carolina, counties either have a Board of Education or a Board of Trustees. In 39 of the 46 counties, these officials are elected but in the nine others, the governor appoints the members.[9] These Boards also vary in size. Many (19) have seven members; fifteen others have nine members, and the rest run the gamut from five to 16. To examine the impact of these two forces on the quality of educational instruction, we included the two variables in our private school-public school model. We incorporated a 0,1 dummy variable taking the value one when the county board of trustees are appointed by the governor of the state and zero when elected by the citizens of the county. We also included a size variable which is simply the number of members on the county board of trustees.[10]

We estimated this revised model by ordinary-least-squares. The coefficient estimates on the original parameters are basically unchanged as are their levels of significance. Notably, the impact of expenditures per pupil remains insignificant while the EIA dummy remains negative

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[8] There is an alternative explanation worthy of examination that we have not explored. Contemporaneous with the increased expenditures and other changes wrought by the 1984 EIA, the private schools in South Carolina either lowered their tuition rates or raised their quality to maintain their market position. That is, in the face of increased competition, the private schools made a simultaneous adjustment in quality enhancement that makes it difficult to uncover the true impact of the 1984 EIA. We plan to explore this notion in the future, when data availability make it possible to measure private school tuition and the underlying quality of private schools. However, at this point we can only assume that private schools did not make such an adjustment.

[9] In one case the governor appoints some, but not all of the officials. The remainder are elected.

[10] In an alternative specification, we adjusted the size of the board of trustees for the population of the county. This adjustment yields similar results to the ones reported in Table 3.

Table 3 Trustee Size and Selection--The Impact on Private/Public School Enrollment

Dependent Variable: **Ratio of private school to total enroll**

Ordinary Least Squares Model

F Value = 116.466 Prob > F = 0.0001 R2 = .5488

	Parameter Estimate	t ratio	Prob > |t|
Appointed Trustees Dummy	0.010442	3.501	0.0005
# of Trustees	-0.000425	-0.719	0.4726

and significant. The coefficient estimates on the two organizational variables, election versus appointment and board size, are reported in Table 3. We find that the dummy variable capturing the impact of appointed trustees is positively associated with private school enrollment. When the public school trustees are appointed by the governor, parents tend to send their kids to private schools, ceteris paribus. Secondly, we do not find any statistically credible relation between the sizes of school boards and the private school enrollment ratio.

Why do these turn out this way? Two explanations come to mind. Elected trustees are more closely controlled than appointed ones. When trustees are selected by the governor and they do a poor job, it is more difficult for voters, taxpayers, and parents to influence the process because they must work through and express their dissatisfaction through the governor's office. Of course the same argument holds when the trustees do a good job. It is more costly to heap praise as well. By contrast, when trustees are elected voters know who is responsible for the bad and good choices; they are. Appointed trustees create higher agency costs because an extra layer of decision making and control is involved. Lower quality output will, in general, be the result.

One reason that school board size is insignificant may be the presence of countervailing effects. Larger boards may mean greater voter influence on the board, since each board member is responsible to fewer voter/citizens/parents. Thus, large boards yield better quality public schools. However, this effect could be offset by the fact that larger boards will almost surely have higher costs of decision making.

We performed similar tests of model sensitivity that we reported earlier, attempting to account for autocorrelation in the error terms and heteroscedasticity of errors. These alternative specifications did not alter the basic conclusions suggested by Table 3.

Expenditures

As one might imagine, expenditures per pupil vary considerably across counties in the state. Adjusting for the effect of inflation, we see that the annual per pupil expenditure in SC has increased in real terms at about 5% per year over the period 1957-1985. Examine Figure 4. Real expenditures took big leaps in 1967, 1976, and 1982. They fell substantially, more than 10%, only once, in 1977, which was probably due to the high rate of inflation in that year. However, as the figure demonstrates, in recent years the trend of consistently increasing real

expenditures evident in the 1958-1975 period has not persisted. In three of the most recent ten years, real expenditures declined.

In some important respects the quality of education and expenditures are jointly determined along with the tax rates necessary to supply the funds. To determine if this simultaneity situation is affecting our single equation OLS results, we reestimated the private school ratio equation jointly with an expenditure and tax price equation using the method of three-stage-least squares. This alternative approach yields virtually the same results as the ones reported in Table 2.[11] We interpret this to mean that the question of tax prices is not driving the relation between expenditures and quality that we report.

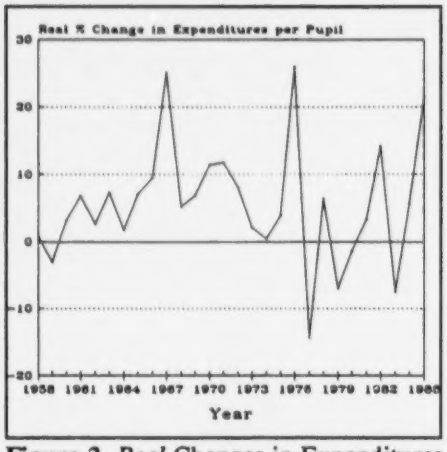

Figure 2 *Real* Changes in Expenditures per Pupil

IV. Summary, Conclusions, and Suggestions for Further Work

To say that education is an understudied area in the academy is an understatement. There is a surprising dearth of analysis into the organizational structure of secondary and higher educational institutions. We have by no means corrected this oversight in our paper, but we hope we have made a convincing argument that there is ample room for solid research in this area. We have examined 30 years of county level data in South Carolina, and we have uncovered several things. First, we found that there is no statistically credible relation between public school expenditures per pupil and the private school/public school enrollment ratio. However and importantly, we did find that the directed changes in rules, organizational structure, and incentives, mandated by the 1984 Educational Improvement Act did reduce the relative number of children attending private school. We interpret this to mean that the features of the law requiring better accountability and the like were perceived by parents to make for better education while the increased money spent was only a transfer to teachers or some other groups; we find that organization matters more than money.

Along the way we developed a technique for gauging the quality of schools. The private-public school enrollment ratio is one metric of the relative quality of the two systems that policy makers can use for introspection and evaluation. Second, we found evidence that counties with multiple school districts have better public schools relative to the private peers. Third, according to our estimates, counties with multiple, competing districts have better schools. That is, in counties with more than one school district, fewer parents send their children to private schools. This supports the view of those who argue for more competition in the provision of public education.

[11] The exact model specifications and estimates are not reported here in the interests of brevity. They are available from us.

In all cases, much work remains to be accomplished. For instance, it is vital to know whether the capital-labor components of spending vary across different school districts. Given the sum of money currently being spent on education in this country, it is our belief that we can ill afford to remain so incognizant of the role institutional and organizational forces play in the production of schooling.

References

Chubb, John. "Comments," included in Nathan Glazer, John Chubb, and Seymour Fliegel, Manhattan Paper No. 5, Manhattan Institute, New York, 1988.

Fama, Eugene F., and Jensen, Michael C. "Agency Problems and Residual Claims," *Journal of Law and Economics* 26, no. 2 (June 1983):327-49.

Green, Robert P., Jr. "The School Busing Case," unpublished manuscript, Elementary and Secondary Education, Clemson University, 1990.

McCormick, Robert E., and Meiners, Roger E. "University Governance: A Property Rights Perspective," *Journal of Law and Economics* 31, No. 2 (October 1988):423-42.

Manne, Henry G. "The Political Economy of Modern Universities," in *Education in a Free Society*, ed. by Anne Burleigh, Indianapolis: Liberty Press (1973):614-30.

Smith, Adam. *An Inquiry into the Nature and Causes of the Wealth of Nations*, New York: The Modern Library, 1937.

Toma, Eugenia F. "Institutional Structures, Regulation, and Producer Gains in the Education Industry," *Journal of Law and Economics* 26, No. 1 (April 1983):103-16.

Toma, Eugenia F. "State University Boards of Trustees: A Principal-Agent Perspective," *Public Choice* 49, No. 2 (1986):155-63.

Toma, Eugenia F. "Boards of Trustees, Agency Problems, and University Output," *Public Choice* 67, No. 1 (1990):1-9.

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